



Word-of-Mouth influence in prescription medication
Case: PrEP (Pre-Exposure Prophylaxis) – HIV
prevention medication

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| Abstract: | |
| <p>This research aims to shed lights on identifying the key characteristics of word-of-mouth (WOM) influence in the recommendation of PrEP and scrutinizes their impact of PrEP recommendation on PrEP users' perceived influence. Through literature review, WOM marketing was found to have a potential influence on healthcare marketing which motivated this study. By adopting the theoretical framework from the study of Akira and Young (2016), identified WOM determinants are characteristics of message sender (expertise and trustworthiness), the message (richness of message content and strength of message delivery), homophily and involvement. All mentioned independent latent variables were treated as antecedents impacting dependent variable WOM influence. The data was collected by disseminating a survey on the Facebook group called 'PrEP facts: Rethinking HIV prevention and sex' asking current PrEP users to recall the most recent accepted recommendation about PrEP. Following the quantitative research, the findings manifest that WOM influence in PrEP recommendation was positively impacted by expertise, strength & richness of message delivery and homophily. Accordingly, Gilead Sciences Inc., the drug producer, is recommended to increase the marketing of PrEP to healthcare professionals, adopt storytelling in their message delivery and embrace patient advocacy groups.</p> | |
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ABBREVIATIONS

WHO: World Health Organisation

PrEP: Pre-exposure prophylaxis

WOM: word of mouth

HIV: Human immunodeficiency virus

AIDS: Acquired immunodeficiency syndrome

FDA: Food and Drug Administration

NGOs: Non-Government Organisations

1 INTRODUCTION

1.1 Background

PrEP being used for HIV prevention medication has drawn a lot of attention in the press in the past few years. Truvada that contains tenofovir and emtricitabine (TDF/FTC) produced by Gilead Sciences Inc, is approved by the FDA and backed up by the Centers for Disease Control (Rowniak S, 2015). Despite the legit approval, PrEP has not been effectively targeting its potential consumers. This is shown by only fewer than 1 out of 10 eligible for PrEP, according to CDC guidelines, were using and adhering to the medicine (Parsons JT, et al., 2017). Due to this fact, this study attempts to explore potential ways to market PrEP to more potential consumers by using WOM influence theory.

Only limited direct-to-consumer marketing is legal for prescribed medicine in the U.S, New Zealand, Bangladesh and South Korea (Pharmtech, will DTC advertising appear in Europe). Thence, WOM influence is arguably worth researching for the marketing of prescribed drugs and PrEP is not exclusive to this.

In professional services context, WOM is perceived as crucial. It was evident that consumers relied on WOM to reduce the level of perceived risk and the uncertainty associated with the service (Murray, 1991). The same viewpoint can be applied to the decision to purchase Truvada as PrEP which could be argued to be risky and uncertain for many individuals.

Gradual loss of interest from audiences over traditional marketing acts as a precursor to recent studies of Word of Mouth marketing strategies. Misner (1999) once stated WOM being least understood despite being most effective.

This research aims to examine the impact of key characteristics of WOM communication on PrEP users' perceived influence. The objective will be achieved by surveying online objects which are current PrEP users and received recommendations about the medication before using it. The Facebook group called 'PrEP facts: Rethinking HIV prevention and sex' is the platform for dissemination of the questionnaire. The findings of the survey are used to propose WOM marketing

strategies that the company can potentially employ to reach out to potential consumers more efficiently.

1.2 Research aim and questions

The intention of this research is to explore the influence of key characteristics of WOM communication on PrEP users' perceived influence. Consequently, the research questions are purposed:

Question 1: What are the factors that impact WOM recommendations perceived by PrEP users?

Question 2: To what extent these factors influence WOM recommendations perceived by PrEP users?

Accordingly, the findings can act as a precursor to suggestions of implementations of potential WOM marketing strategies to connect to more potential consumers.

1.3 Structure

6 chapters are presented in this thesis. Chapter 1 outlines the overview of the study, including background and motivation for the research, research objective and research questions. Chapter 2 contains literature review that sheds light to PrEP (Pre-Exposure Prophylaxis) and Gilead Sciences Inc.; the company created the drug, as well as the central concept of WOM marketing. Chapter 3 introduces the readers to the concept of message sender characteristics, message characteristics, homophily and message receiver's involvement, in which the research model and hypothesis development are based on. After that, the methodology is presented in Chapter 4 which includes the design, instrument, participants and the background of the quantitative analyzing methods used in the research. Accordingly, the step by step analysis and findings are presented in Chapter 5 that measures the determinants of WOM influence in PrEP recommendation and hypotheses confirmation. Finally, Chapter 6 discusses and concludes the strengths and weaknesses of the study. On top of that, it suggests possible implications derived from the findings for the company to reach out to potential PrEP consumers using WOM marketing.

2 LITERATURE REVIEW

2.1 PrEP (Pre-exposure prophylaxis)

What is PrEP?

People at high risk of HIV can consider PrEP as an option to prevent getting infected. PrEP is sold by Gilead Sciences under the brand name Truvada. Truvada is a combination drug containing two active ingredients of Tenofovir and Emtricitabine. These two active ingredients have been used in treating HIV but is also used for HIV prevention. The drug is effective in preventing HIV from sexual intercourse or injecting-drug-using partner who is HIV positive. It is documented that PrEP is efficient in HIV prevention if dosage taken is to adhere strictly. PrEP's effectiveness can be diminished if dose usage is not consistent. The medicine has been approved by FDA and recommended by WHO (Centers for Disease Control and Prevention, PrEp).

How does PrEP work?

Pebody R (2015) compares PrEP action mechanism as similar to that of malaria prevention. Antiretrovirals (ARVs) of high levels in the bloodstream can form a protective barrier against HIV when PrEP is taken. Consequently, the virus is stopped from entering the cells and replicating by the ARVs at the point of transmission, thus keeping the person remains HIV negative.

How effective is PrEP?

According to IPrEp OLE study, no individual has been found to seroconvert HIV if they adhere to the dosage of 4 times per week (recommended daily dosage). Hence the efficacy of PrEp is proven. The study suggests 99% effectiveness. (Celum C, 2012; Anderson PL, et al., 2012)

Despite the efficacy of the drug, the first case of PrEP failure was documented on the 25th of Feb 2016 due to multi-drug resistant strain. The object was found to adhere to the daily regimen of Truvada regardless of the drug failure (David Knox 2016).

In October 2016, the second case of PrEp failure was documented by Cleveland Clinic HIV specialist Howard Grossman. Similarly to the first case, the patient was found to have adhered to the daily dosage by hair and blood tests. The HIV strain the patient got

infected was a resistant strain to both of the active ingredients in Truvada (Hiv plus mag, 2016).

The third case of PrEP failure was presented by Elske Hoornenborg, MD, an infectious disease specialist in Seattle at the Conference on Retroviruses and Opportunistic Infection (CROI) in 2017. This case of failure was not found to be due to drug resistance. Instead, it was hypothesized that the object was constantly exposed to the virus due to high-risk sex lifestyle. Professor Robert M. stated that the third case failure is only one of very few cases. Considering that fact that there are many people who are helped by PrEP, the ratio is small and PrEP is still effective. There are no 100% effective protection method including condoms (Ryan B, 2017)

2.2 Gilead Sciences Inc.

Truvada was created by Gilead Sciences Inc, a biopharmaceutical company that researches and commercializes drugs for chronic diseases like Hepatitis and HIV. Regarding HIV, they focus on HIV treatment and prevention medication (Gilead Sciences Inc, about).

2.3 WOM marketing

2.3.1 Definition of word of mouth

WOM marketing refers to the marketing of B to C to C. When the advertisement is done initially by the marketers to the consumers, it is defined as B to C marketing. After that, C to C marketing is when satisfied consumers start talking about the products or services they experienced to other potential consumers (Andy 2012).

Back in early 1967, WOM was defined by Arndt in oral form performed from person to person, and it was perceived as non-commercial in terms of brand, product or service (Arndt, 1967). Nearly three decades later in 1994, Stern drew new lines on WOM definition. She wrote that '...WOM involves the exchange of ephemeral oral or spoken messages between a contiguous source and a recipient who communicate directly in real life ... Consumers are not assumed to create, revise and record pre-written conversational exchanges about products and services.' Moreover, she stated that WOM communication perishes by the time of articulation. (Stern, 1994)

However, the concept was reargued in 1998 by Francis that WOM does not need to be face to face, direct and oral in the electronic era. Rather WOM had been evidenced virtually. For example, Negative WOM was spread by United Airlines passengers by the mean of electronic community (Francis A. Buttle 1998).

2.3.2 The effectiveness of word of mouth marketing

There have been abundant sources of research claiming that WOM can be more persuasive for marketing purposes than other marketing tools. The survey conducted by Forrester (2005) reported that consumers had been less aware of advertising between September 2002 and June 2004. He concluded that 40% less learn from the products from ads, 41% more said they don't buy products because of the ads, and 49% fewer finds ads captivating.

WOM communication strategies can be much more cost and time efficient to overcome the hurdle of consumer resistance especially with the help of technology like the internet (Trusov et al., 2009). He also stated that there has been not enough empirical evidence measuring the effectiveness of WOM and therefore raises the urge for further relevant studies in this context.

Since the internet of age, consumers can easily share their experiences, thoughts, and comments with each other regarding the goods or services they obtained that could reflex their level of satisfaction and hence get passed on by one to another. This form of WOM is prominent on the internet and is also a potential platform for marketers to exploit (Trusov et al., 2009). As an example, fledging dot-com companies were documented to initially hook consumers' awareness by cheaper marketing strategies such as blogging and word-of-mouth campaigns' instead of blowing away investment on Superbowl ads (Whitman 2006). However, later on, when the maturity reached, companies like careerbuilder.com and GoDaddy.com spent an impressive amount of money on traditional marketing. For this trend, it is important to understand how WOM marketing works and whether combining it with traditional marketing could be efficient (Trusov et al., 2009).

Social networking sites (Facebook, Twitter, Instagram, etc.), review sites and blogs are the common platforms to facilitate consumer interactions and hence endeavor sources to study WOM (Lee and Youn, 2009). Moreover, social networking settings offer an unobstructed environment for cross-section interactive communication between many

parties such as consumers-consumers, consumer-organisation, organization-organisation, thus amplifies the WOM effect regarding commercial online activities (Edelman 2007; Trusov et al., 2009).

In the long run, members joining the sites (sign-ups) by invitations electronically is about 20 to 30 times higher than that of marketing events and media appearances respectively (Trusov et al., 2009).

Stated advertising was much less important and influential in raising awareness of innovation as well as promoting the trial of the product (Sheth 1971). Francis's research manifested that WOM delineates to being influential for alertness, expectations, perceptions, attitudes, behavioral intentions and behavior. Hence it is confidently evidenced that WOM is most of the time more influential on behavior than other marketer-controlled sources (Francis A. Buttle 1998)

In Jillian's research, the author urged for more research of WOM to be examined in specific message details that include cognitive content, richness, and strength of delivery in an online context focusing on social networks (Jillian C 2012).

Recent research by Martin (2017) noted the essence of WOM in the healthcare sector. The article stated that although the healthcare sector is viewed as costly, many individuals' lives are dependent on it; hence WOM is one of the documented factors that have impacts on the health behavior. The study revealed that WOM poses high interaction with healthcare service which could be influenced by other factors relevant to WOM. Acknowledging the power of spreadability in influential networks and large groups of people, the stakeholder theory found in the study suggests taking WOM into consideration as part of disseminating a healthcare recommendation.

3 RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

3.1 Research Model

In this research, the research model as shown in figure 1 is adapted from Akira and Yong (2016). Their research uses several key aspects of the framework created by Sweeney et al. (2008).

Despite many other outcomes of WOM, Akira decided to focus on WOM influence to directly measure the influence of WOM for their study about measuring the message

receivers' sports viewership Akira et al. (2016). This research is also based on Akira's approach to the measurement of WOM influence. Hence, by applying Akira's research model, the study can directly measure WOM influence on message receivers' perceived influence about the recommendation of PrEP.

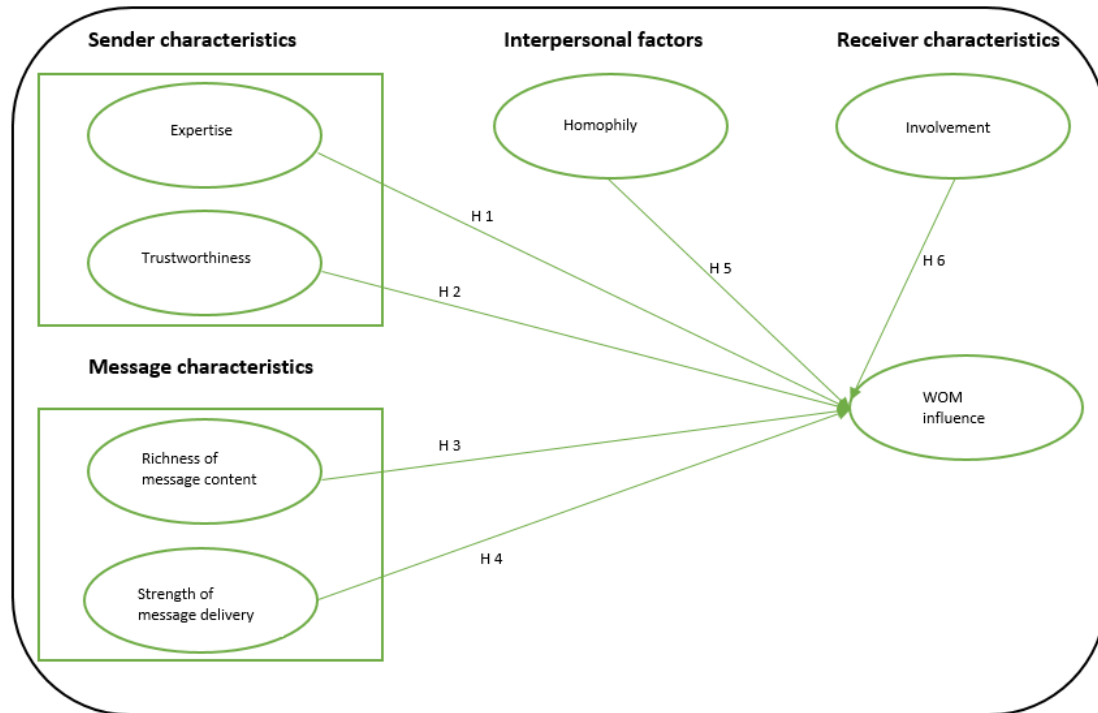


Figure 1 The proposed research model. H = hypothesis; WOM = word of mouth

Factors proposed in the Sweeney's framework which was adopted by Akira which builds a firm foundation for the focus of message senders' characteristics such as Expertise and Trustworthiness; the message's characteristics like richness of message content and strength of message delivery. The mentioned elements of the research model are considered as antecedents of perceived influence of WOM. Antecedents are factors or events that must take place before the main concept in this case WOM influence (Walker & Avant, 2011). On top of that, Akira's framework proposed to examine moderating effects of homophily (interpersonal factors) and involvement (message receiver characteristics); however, this study replicates the theory proposed by Sweeney by considering homophily and involvement as antecedents of WOM influence. The following section manifests the theoretical background of each hypothesized relationship.

3.2 Theoretical Background and Hypothesis Development

3.2.1 Message sender characteristics

From an experimental study, Hovland and Weiss (1951) claimed that it was more likely for someone to align their opinions with a highly credible person compared to someone with low credibility. This concept was further explored by McGinnies and Ward (1980) demonstrating that expertise and trustworthiness play important roles in credibility; hence these concepts are chosen as key characteristics for senders.

Expertise

The definition for expertise is that the information is perceived as valid from a source (Pompitakpan, 2004). Experts are argued to have their messages come across as valid, trustworthy which is a catalyst to message receivers' persuasiveness. The persuasiveness level is intensified with a strong message (DeBono & Harnish, 1988). Furthermore, a sender's expertise plays an important role in WOM influence on the receiver's purchase decision (Bansal and Voyer, 2000). Hence, the following hypothesis is proposed:

Hypothesis 1: A message sender's expertise is positively proportionate to WOM influence in PrEP recommendation.

Trustworthiness

Trustworthiness is the perceived level of how reliable and integral the WOM message is (Pompitakpan, 2004). It was purposed that trustworthiness is based on personality while expertise is relevant to knowledge (McGinnies & Ward 1980). Likewise, it was resulted from focus group interviews that someone's willingness to listen to recommendation is derived from perceived favorable personality traits of the sender in which trustworthiness plays an important role in (Sweeney et al., 2008). Thus, the following hypothesis is formed:

Hypothesis 2: A message sender's trustworthiness is positively proportionate to WOM influence in PrEP recommendation

3.2.2 Message characteristics

Two major concepts were collected from a qualitative data are Richness of the message and strength of advocacy in WOM messages.

Richness of message content

A message is considered rich when it is vivid, deep and informative. For example, a detailed recommendation about a product or service is considered as rich (Mazzarol et al., 2007; Sweeney, Soutar, & Mazarol, 2012). Mazzarol et al. (2007) proposed that rich WOM messages contain intriguing stories. Accordingly, a third hypothesis is proposed: Hypothesis 3: Richness of message content has a positive proportional relationship with WOM influence in PrEP recommendation.

Strength of message delivery

In contrary to richness of the message, strength of advocacy revolves around emotional tone and sense of enthusiasm in WOM messages; In other words, the perceived strength of the message reflected in a WOM message (Mazzarol et al., 2007; Sweeney et al., 2012). It was found that a message is more inclined to sound persuasive in the presence of powerful language (Areni & Sparks, 2005).

Consequently, the fourth hypothesis is proposed:

Hypothesis 4: Strength of message delivery is directly proportional to WOM influence in PrEP recommendation.

3.2.3 Homophily

Similar to the research of Akira and Yong (2016), homophily is included into this research model as a key interpersonal factor. It was researched that product or service recommendation tends to happen among similar people with similar interest (De Bruyn & Lilien, 2008). On top of that, similar lifestyles and socioeconomic characteristics is a catalyst for information flow in social networks (Lin, 2001).

Moreover, despite Akira and Young (2016) treats non-interpersonal factors (e.g., trustworthiness) as antecedents and interpersonal factors (e.g., homophily) as moderators, this study follows Sweeney et al. (2008) 's approach to treating both non-interpersonal and interpersonal factors as antecedents. As a result, the following hypothesis is proposed:

Hypothesis 5: Homophily bears direct effects on the influence of WOM recommendation for PrEP.

3.2.4 Message receiver's involvement

Somewhat similar to the concept of sports involvement in the study of Akira and Yong (2016), involvement in HIV prophylaxis is considered as an essential characteristic in this research model.

By definition, involvement describes how perceivably relevant an object is (Zaichkowsky, 1985). An investigation about how people were influenced by online customer reviews was conducted. The study manifested that the more someone involves with a product, the more they were influenced by information of the customer review (Lee, Park & Han, 2008). Thenceforth, the last hypothesis is produced:

Hypothesis 6: Involvement positively impacts the influence of WOM recommendation for PrEP.

3.3 Measured factors

Despite WOM influence is impacted by many different factors as mentioned in Akira and Young's (2016) research, this study replicates the factors and variables that were proposed by Akira since both studies measure the same dependent factor which is WOM influence. Hence, there are six proposed independent factors and one dependent factor. The variables for each factor are shown as follow.

Independent factors

Expertise

Expertise in this study's context means how the message receiver perceives the level of the message sender's expertise, knowledge and experience about the PrEP product recommended. Hence, independent factor 'expertise' is measured by the three following variables replicated from the questionnaire of Akira's study:

- What level of expertise about PrEP do you consider the message sender possessed?
- In your opinion, how experienced was the message sender about PrEP topic?
- In your opinion, how knowledgeable the message sender was about PrEP?

Trustworthiness

Trustworthiness is the measurement of whether the message receiver perceives the message sender as trustworthy, sincere, reliable and honest. Therefore, the factor is measured by the following four variables replicated from the questionnaire of Akira's study:

- How honest do you consider the message sender was?
- How reliable do you consider the message sender was?
- How sincere do you consider the message sender was?
- How trustworthy do you consider the message sender was?

Richness of message content

Richness of message content is the measurement of how message receiver perceives the PrEP recommendation whether it was informative, clear and specific. Following are the three variables measuring richness of message content that are replicated from the questionnaire of Akira's study:

- How informative do you consider the recommendation was?
- In your opinion, how clear was the recommendation?
- In your opinion, how specific was the recommendation?

Strength of message delivery

Strength of message delivery measures how the powerful, strong and important the message receiver perceived the recommendation about PrEP. Therefore, these three following variables were proposed based on Akira's questionnaire:

- You think that the message delivery had a powerful tone?
- You think that the message content was delivered in a strong way?
- You think that the message was delivered in an important manner?

Involvement

Involvement is the proposed factor measuring message receiver's perception of how important, relevant and valuable HIV prevention was prior to receiving recommendation about PrEP. Hence, the following three valuables were proposed based on the questionnaire represented in Akira's study:

- How important did you consider HIV prevention was prior to PrEP recommendation?

- How relevant did you consider HIV prevention was prior to PrEP recommendation?
- How valuable did you consider HIV prevention was prior to PrEP recommendation?

Homophily

Homophily factor measure the message receiver's perception of the similarity between the message receiver and the message sender in terms of their likes, dislikes, values and outlook in life. Therefore, these three variables were proposed based on the questionnaire in Akira's study:

- Considering your outlook on life how similar are you to the message sender?
- Considering your likes and dislikes, how similar are you and the person?
- Considering your values, how similar are you and the person?

Dependent factor

WOM influence

According to Akira's study, WOM influence is directly measured by these three following variables:

- In your opinion, did the recommendation have an influence on your decision to go on PrEP?
- In your opinion, did the recommendation have an influence on your decision to go on PrEP?
- Did the recommendation help you to make a decision to go on PrEP?

4 METHODOLOGY

4.1 Research design

There are a few philosophical approaches namely positivism, realism, interpretivism, objectivism, subjectivism, pragmatism, and functionalism (Collins, 2010). Despite having many philosophical approaches, this study employs positivism approach due to the following reasons:

Firstly, positivism approach is essential in exploring the causal relationship between different variables as described in the theoretical framework. Fisher et al. (2004) and

Neville (2005) stated that in order to eliminate subjective content from hypotheses and theories, scientific method is needed to explore all phenomena through a neutral language of observation. Hence, causal relationship can be clarified using positivism. Secondly, according to the construct of the study, an objective argument approach derived from positivism seems more plausible than a subjective one in which provides better understanding and reality (Schutt, 2006).

Lastly, positivism philosophical approach embraces the practicality of study that is based on larger sample size (Altinay and Paraskevas, 2008). Regarding the study of WOM influence of PrEP recommendation, the results would not be reliable without many respondents. Hence, positivism approach would aid in understanding the characteristics of WOM influence and its determinants from the PrEP recommendation receivers.

In spite of having two major research reasoning, namely deductive and inductive, this study incorporates deductive reasoning due to the same reasons why positivism is chosen (Schiffman and Kanuk, 1997). Moreover, deductive approach consumes less time than inductive approach, hence suitable for the researcher's time constraint (Saunders et al., 2009).

Two major methods used in research are quantitative and qualitative. There are a variety of reasons why quantitative research method is selected for this study:

First and foremost, the casual relationship between the dependent factor WOM influence and its independent variables (expertise, homophily, strength of message content, richness of message content, trustworthiness, involvement) can be measured by analyzing numerical data using mathematically based methods (Muijs, 2004; Jha, 2008). The quantitative tests employed to explore these casual relationships are reliability test, exploratory factor analysis, Pearson Chi-Square test and multiple regression analysis. Secondly, quantitative research method provides accuracy in findings in a larger sample compared to qualitative research method. Qualitative research method is executed by collecting data from in-depth interviews, group interviews or direct observation in which these data collection methods only concern a small sample (Boxill et al., 2009). Since this study's construct focuses on a larger scale to explore relationships among phenomena and hypothesis testing, it is plausible that quantitative research method is selected.

Saunders et al. (2009) stated that there are two sampling techniques which are probability sampling and non-probability sampling. In this case, voluntary response

sample was obtained by non-probability sampling method at the convenience of the respondents anomalously and voluntarily participate in the survey.

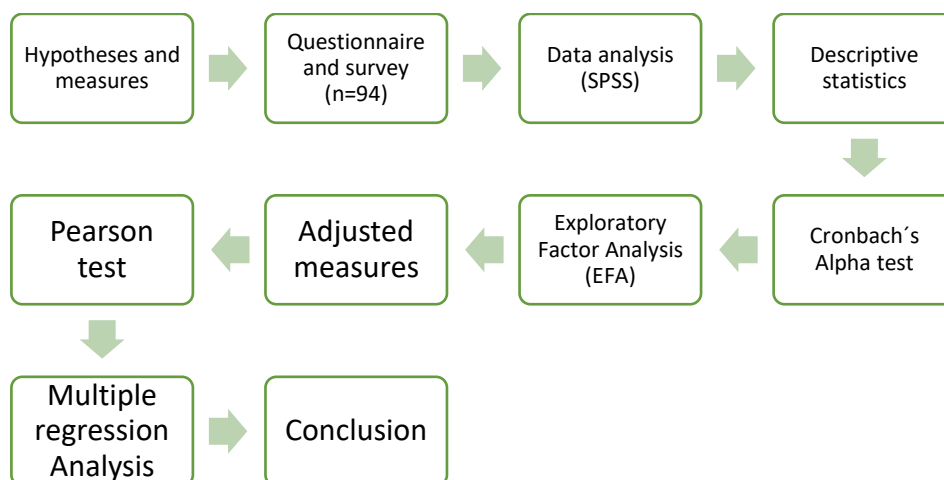


Figure 2 Research process

4.2 Instrument

The questionnaire in this study is divided into 3 parts:

The first part is aimed at obtaining background information which comprises of 3 questions about location, ethnicity, and sexuality.

The second part which comprises of 22 questions are purposed at obtaining the assessment of the message receivers towards the research's questions. The questionnaire referenced in the appendix adapted from Akira's research was designed for self-administration which means the respondents answer each pre-determined given set of questions. For each question asked, the respondent will choose between 1 and 7 based on the Likert scale of 7.

The third part consists of only 1 open question 'who recommended PrEP to you?'. This question is used to aid with the interpretation and conclusion of the study.

4.3 Research participants

Primary data is used in conducting the study by distributing the survey on a facebook group called 'PrEP facts: rethinking HIV prevention and sex'. The reason why the group is chosen for collecting data because there are more than 15,000 members in the group as of October 2016, hence the chance of receiving responses is higher and

quicker. Moreover, the group's interest lies in PrEP and factors revolved around it which is compatible with the interest and aim of the survey. The description of the survey specifically stated that only current PrEP users who accepted a recommendation about PrEP should take part in the survey. Before posting the survey on the Facebook group, the permission was granted from the group owner Damon L. Jacob. The participants took part in the survey through google forms portal where the survey was created. After the survey was posted and seen on the Facebook group, the participants took part in the survey voluntarily and anonymously. Therefore, confidentiality was absolute which potentially facilitated honesty in the answers. The answers were collected from the 26th of October 2016 to the 11th of November 2016 and were saved in google excel which was synchronized automatically from the survey answers and then transcribed into SPSS for analysis.

4.4 Data analysis

Data processing

Following data collection, data coding was performed by transferring values obtained from responses of the questionnaire from excel sheet to SPSS for analysis. Each question's name was labeled in SPSS as followed:

Table 1 Questionnaire label

| | Variables | Labels |
|-----------------|---|--------|
| WOM influence | In your opinion, did the recommendation have an influence on your decision to go on PrEP? | Q1.1 |
| | To what extend was your decision to go on PrEP influenced by the recommendation? | Q1.2 |
| | Did the recommendation help you to make a decision to go on PrEP? | Q1.3 |
| Expertise | What level of expertise about PrEP do you consider the message sender possessed? | Q2.1 |
| | In your opinion, how experienced was the message sender about PrEP topic? | Q2.2 |
| | In your opinion, how knowledgeable the message sender was about PrEP? | Q2.3 |
| Trustworthiness | How honest do you consider the message sender was? | Q3.1 |

| | | |
|------------------------------|---|------|
| | | |
| | How reliable do you consider the message sender was? | Q3.2 |
| | How sincere do you consider the message sender was? | Q3.3 |
| | How trustworthy do you consider the message sender was? | Q3.4 |
| Richness of message content | How informative do you consider the recommendation was? | Q4.1 |
| | In your opinion, how clear was the recommendation? | Q4.2 |
| | In your opinion, how specific was the recommendation? | Q4.3 |
| Strength of message delivery | You think that the message delivery had a powerful tone? | Q5.1 |
| | You think that the message content was delivered in a strong way? | Q5.2 |
| | You think that the message was delivered in an important manner? | Q5.3 |
| Involvement | How important did you consider HIV prevention was prior to PrEP recommendation? | Q6.1 |
| | How relevant did you consider HIV prevention was prior to PrEP recommendation? | Q6.2 |
| | How valuable did you consider HIV prevention was prior to PrEP recommendation? | Q6.3 |
| Homophily | Considering your outlook on life how similar are you to the message sender? | Q7.1 |
| | Considering your likes and dislikes, how similar are you and the person? | Q7.2 |
| | Considering your values, how similar are you and the person? | Q7.3 |

Data screening

Raw survey's data was retrieved from google forms where the survey took place. The data was transferred to Excel for pre-screening for any missing or unengaged responses.

Missing values:

Countblank formula in excel was to screen for missing values. There were no missing values in the result which indicated that the respondents answered all questions.

Unengaged responses:

An unengaged response means that the respondent answered the same value for every single question. This was done in excel by using stdev.p formula. Any result that yields 0 for this formula would indicate that every question was answered with the same number. After the analysis, one respondent answered 1 for every questions which makes the case plausible to be disqualified for the data pool.

Originally there were 94 responses, since 1 unengaged response was removed, the rest of 93 responses (98.9%) were qualified for further analysis. 93 responses were copied and pasted into spss for analysis.

Descriptive Statistics

Descriptive statistics is employed firstly in this research in order to provide an overview (basic features, simple graphical analysis) of the given data set based on brief descriptive coefficient. The result could either represent the sample or the entire population (Trochim, 2006). Regarding this research, descriptive statistics is deployed to create figures of the PrEP recommendation receivers' background information.

Scale assessment

Reliability and validity are measured by Cronbach's Alpha and Exploratory Factor Analysis (EFA).

Cronbach's Alpha is used to eliminate the unsatisfactory variables in order to reconfirm the reliability of each factor. The test can achieve its purpose by checking if the variables measure the same concept (Cronbach, 1951). Regarding this study, the test can check if a particular question was constructed correctly and place in a correct category and whether the respondents gave genuine answer to that particular question. Nunnally (1994) stated that a variable would only qualify to skip elimination if it meets the following criteria:

- Corrected item-total correlation $\geq 0,3$
- $A \geq 0,6$

EFA (Exploratory Factor Analysis)

EFA is used for the purpose of placing a large set of variables in common theme/factor by identifying the underlying relationship between measured variables. In EFA, the

KMO (Kaiser-Meyer-Olkin) index manifests the degree of suitability of EFA method in the construct of the study, the Bartlett's test is an indication of whether EFA test in a particular study is significant or not. In summary, EFA must meet the following criteria according to Hair (1998):

- Factor Loading $> 0,3$ – item with loading less than $|.30|$ is to be eliminated (Nancy L. Leech, et al., 2015)
- $0,5 < KMO < 1$
- Bartlett's test sig. $< 0,05$
- Rotation Sums of Squared Loadings $> 50\%$
- Eigenvalue > 1

Inferential analysis

Pearson Correlation Analysis

Pearson's chi-squared test (χ^2) is used for the measurement of whether there is a relationship between two categorical variables (Gosall, 2012). For two variables to be related significantly, the sig. 2 tailed needs to be less than 0,05.

Multiple Regression Analysis

Multiple regression analysis is a statistical method employed in order to quantitatively measure the hypothesized relationship between the independent variables with the dependent variable (Srivastava, 2011). In multiple regression analysis, the same types of regression equation are applied for multiple independent variables of the study in which the linear relationship of each variable and the dependent variable is determined by a separate regression. Likert scale is used to measure all the variables of the questionnaire.

4.5 Ethical considerations

According to the ethical use of digital data by Clark, et al. (2015), this research has met the requirement of the ethical guidelines as of follow:

Consent: The article raised consent issues arise from social media survey such as Facebook. The proposed ethical concerns are whether the participants know the specific of research project, how information is shared and stored, conflicts of interest among the participants and rights of withdrawal.

Firstly, the participants were able to take part in the survey on the Facebook group by

volunteering. It was clearly stated in the beginning of the questionnaire that 'By taking part in this survey, you give informed consent for the researcher to use the given answers for the study', hence the participants were aware of the purpose of the research project.

Secondly, the participants were also told about the storage of the dataset and the authority of access to the data.

Thirdly, the participants were not rewarded anything for taking part in the survey, hence there was no conflicts of interest.

One drawback is that the participants are not able to withdraw their answers once submitted because the answers are anonymous. This is also mentioned to the research objects at the beginning of the questionnaire.

Therefore, the study fulfilled the criteria of ethical consent.

Anonymity: The research objects' identities were completely anonymous, meaning that neither the researcher nor anyone else get access to who the participants are. This objective was achieved by the anonymous construct of google forms survey (Stabosz I, 2016) which means no links of personal data were available. Hence, anonymity factor is ensured in this study.

Confidentiality: The dataset of the study is only available to the researcher and the team of supervisors of this bachelor thesis. The original dataset is stored on google forms owned by the researcher's google account in which only the researcher has access to. If the dataset is leaked, the security aspect of google will be questioned. The dataset of this research is solely used for the purpose of this research and not for any other studies. If the dataset is requested to be deleted after the research, the researcher himself will be the one responsible for it. The use of the dataset by the researcher is described in the data processing section.

Hence, the data of the survey is absolutely confidential.

Data sharing: assessing the social benefits

The dataset of this study is only available to be used by the researcher solely for the purpose of this research. In other words, the dataset is not to be shared with any third parties for the usage of any purposes. If the dataset is leaked to any third party, the predisposed harm to any individual is evaluated to be non-existent due to anonymous nature of the data set.

This study is based on mere interest of WOM influence in PrEP recommendation and how it can help expand the number of potential consumers of the medicine. The

researcher has not been supported with any financial means from any funding sources. Therefore, it is plausible to conclude that there are no conflicts of interest from the researcher's side and the research is completely independent.

Townsend L. & Wallace (2016) proposed some issues regarding risk of harm related to social media research. The issues are tackled by the following points:

Firstly, anonymity ensuring that no individuals are identified and at risk. Secondly, the research helps exposing potential consumers at high risk of HIV to an alternative HIV prevention method which is arguably beneficial to the society. Thirdly, PrEP is backed up by the FDA, CDC and WHO as mentioned in 'What is PrEP' section. Hence, the research topic is legit. Thus, it can be concluded that there are more benefits than potential harms if there is any harm at all.

It is recommended that the researcher's contact information should be available for consent process (Moreno MA, 2013). Therefore, it was mentioned in the questionnaire that any questions posed by the participants regarding the survey should be messaged to the Facebook profile of the researcher or commented on the Facebook post for quick response or send a message to the researcher's Arcada email.

5 FINDINGS AND ANALYSIS

5.1 Background information

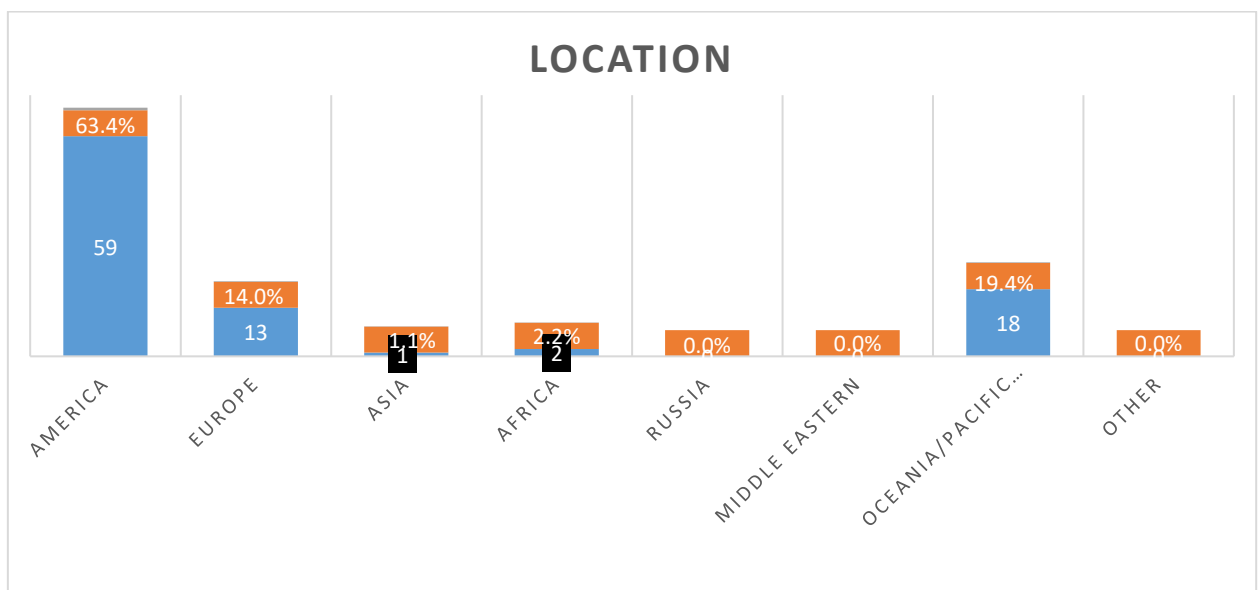


Figure 3 Location information

As shown above, there are 93 research objects in total. The majority of the respondents live in America of 63.4% followed by 19.4% located in Australia and New Zealand. The third largest group is located in Europe with 14%. One 1 research object (1.1%) was in Asia and 2 (2.2%) were in Africa. This could be explained by the fact that Gilead Sciences the company that produces PrEP is based in the USA and initially it was the USA FDA that approved Truvada was a HIV prophylaxis drug. However soon after, Australia and Europe have been catching up with this new HIV prophylaxis method with a fastest pace. Currently there are several PrEP studies carried out in Australia and Europe (Epic-NSW; Avac).

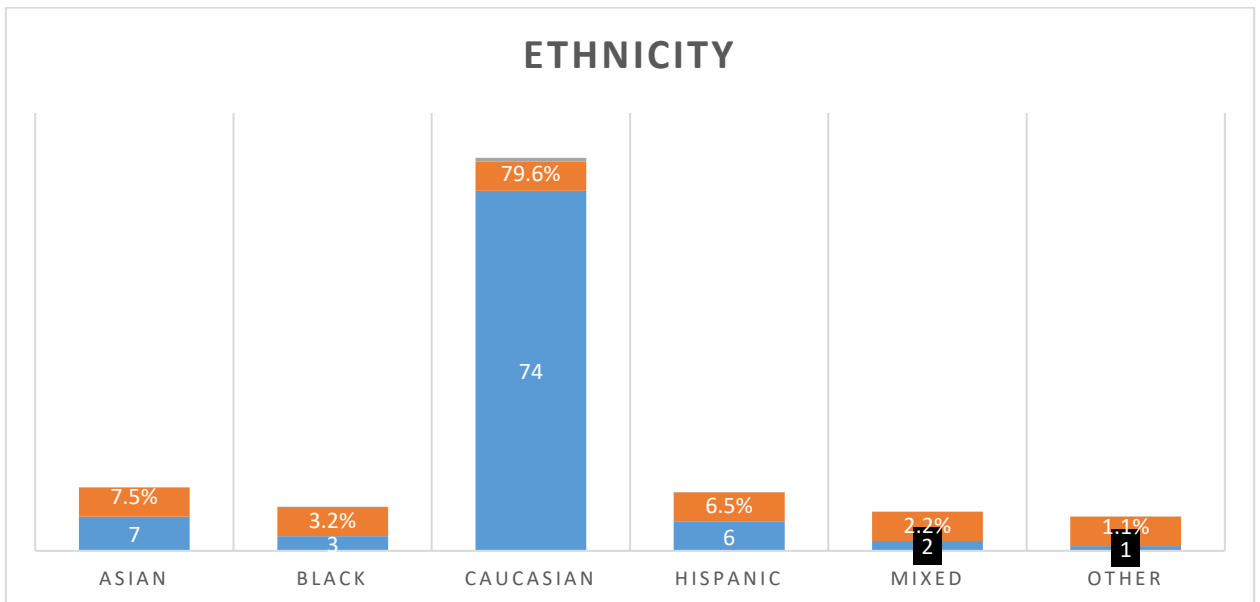


Figure 4 Ethnicity information

As depicted, 74 out of 93 which accounts for 79.6% of the respondents are Caucasians followed by 7.5%, 6.5% and 3.2% of Asians, Hispanic and Black respectively. This can be understood as the majority of PrEP users live in Caucasian predominant areas.

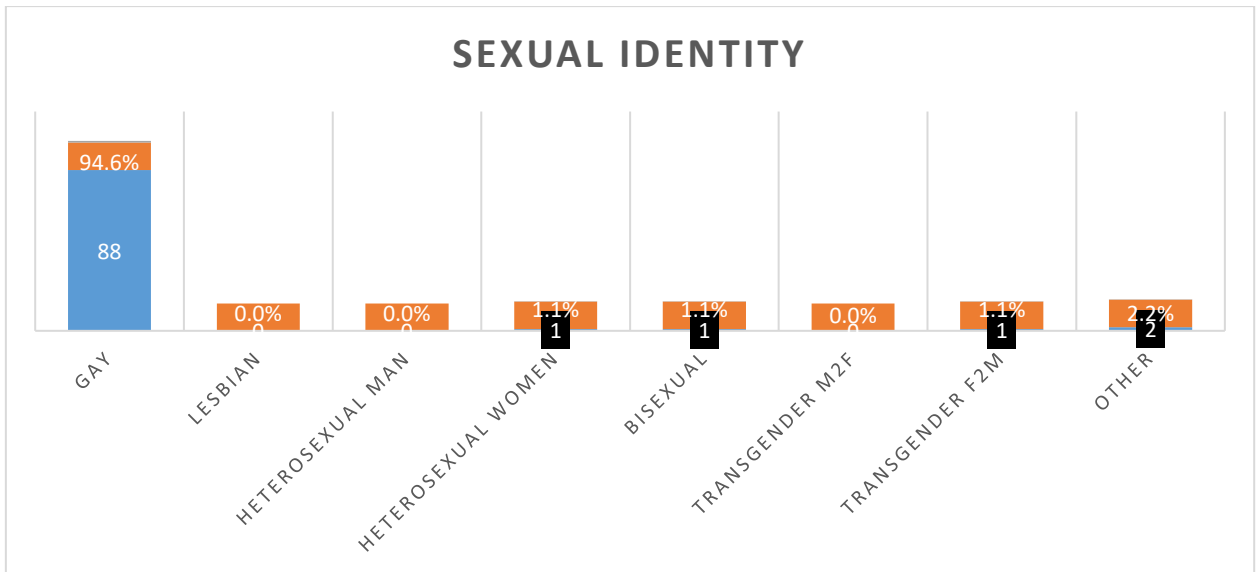


Figure 5 Sexual identity information

The pie chart manifests that the majority of PrEP users who took part in the survey identified as gay, 88 out of 93 which accounts for 94.6%. There is only 1 heterosexual women and 1 who identified as bisexual. It was documented in 2008 that half of the new HIV infections in the USA derived from 4% of the US male population who are men having sex with men (CDC, 2008). Thus, it is statistically plausible that gay men are the majority target of PrEP.

5.2 Descriptive statistics

Wom influence

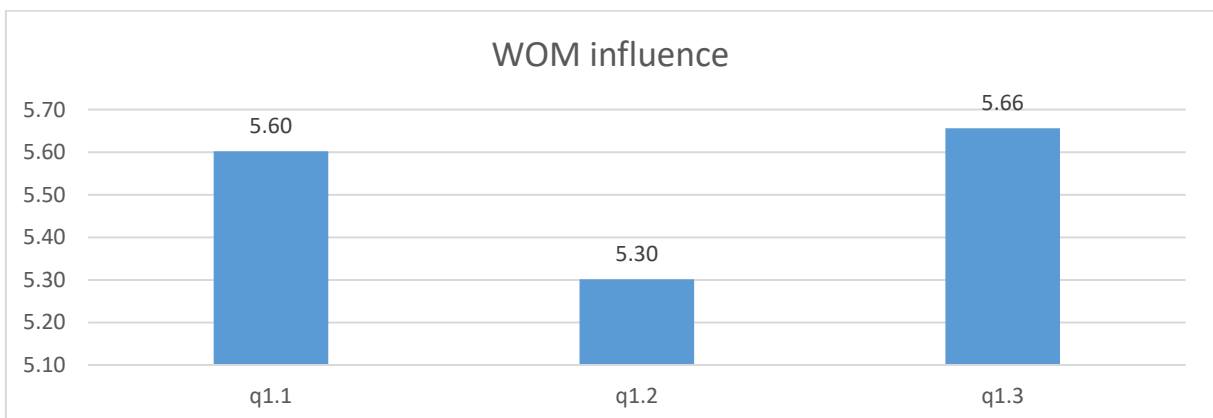


Figure 6 WOM influence statistics

The figure above indicates that q1.3 has the highest ranking of 5.66 out of 1-7 scale, followed by q1.1 and 1.2 of 5.60 and 5.30 respectively. Objectively speaking, the result

doesn't manifest a big difference between the questions and that WOM influences the decision of using PrEP. This means that Gilead Sciences should consider WOM influence seriously in their marketing strategy for PrEP.

Expertise

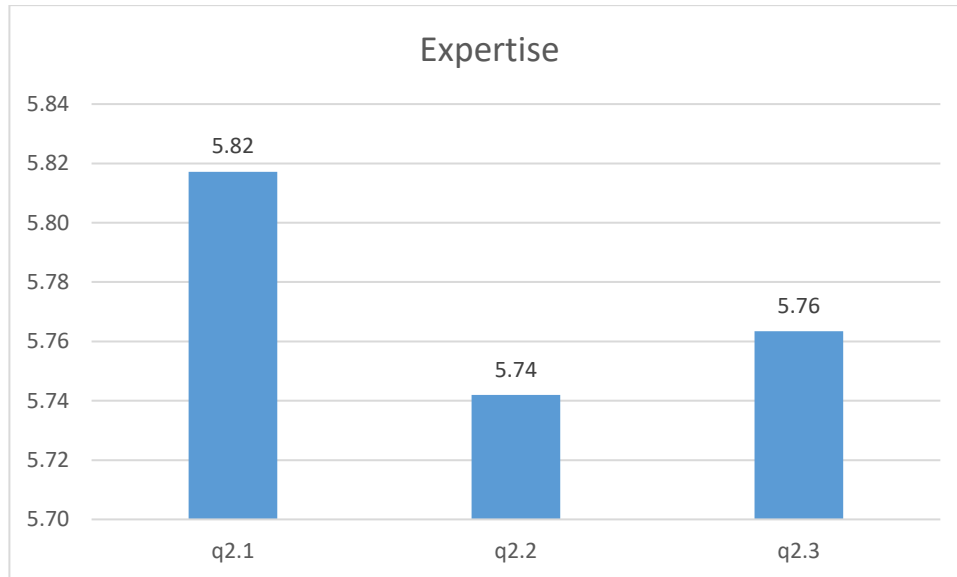


Figure 7 Expertise statistics

The figure above depicts that q2.1 has the highest ranking of 5.82 out of 1-7 scale, followed by q2.3 and q2.2 of 5.76 and 5.74 respectively. Thus, there is not a major difference in the mean results for the three questions, and this also indicates that the message sender has a high level of expertise (knowledge, experience) with the PrEP medication.

Trustworthiness

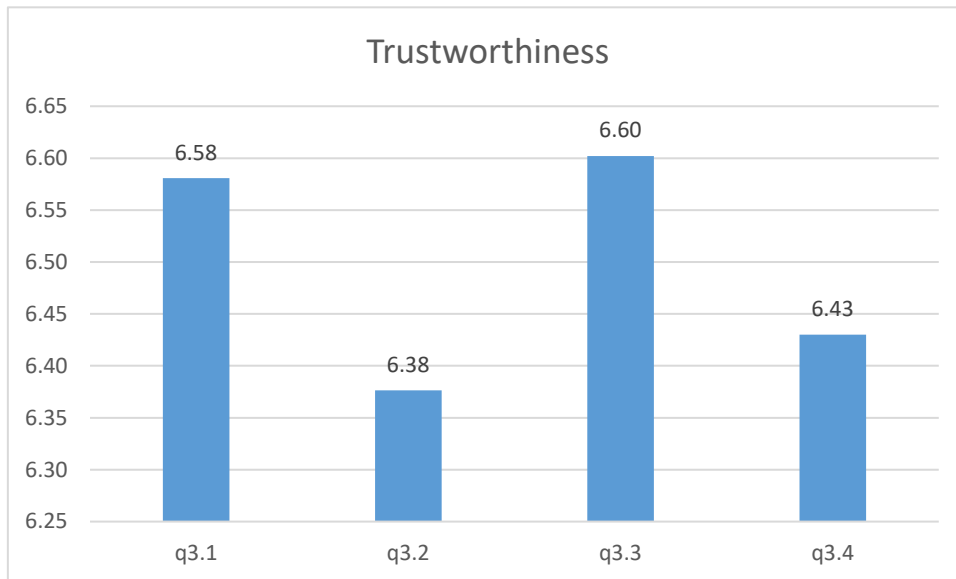


Figure 8 Trustworthiness statistics

The figure above shows a high level of ranking for q3.3 and q3.1 of 6.60 and 6.58 out of 1-7 scale respectively. The figure is followed by q3.4 and q3.2 of 6.43 and 6.38 respectively. In general, there is not a significant difference with these results between the questions. The high mean values indicate that the message sender were perceived as highly trustworthy.

Richness of message content

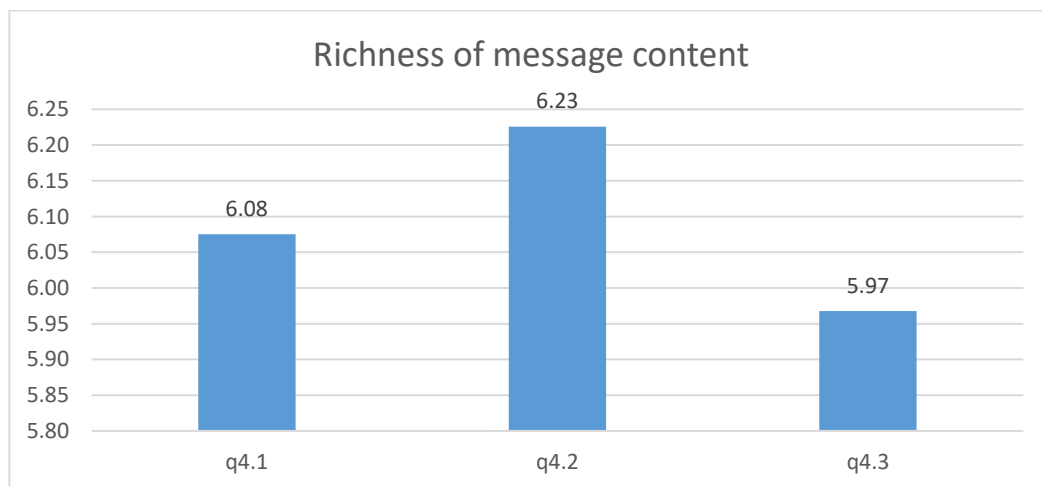


Figure 9 Richness of message content statistics

The chart above shows that q4.2 has the highest level of ranking of 6.23 out of 1-7 scale and are followed by q4.1 and q4.3 of 6.08 and 5.97. These results do not indicate any

significant difference. The high mean values mean that the recommendation message came across as clear, specific and informative.

Strength of message delivery

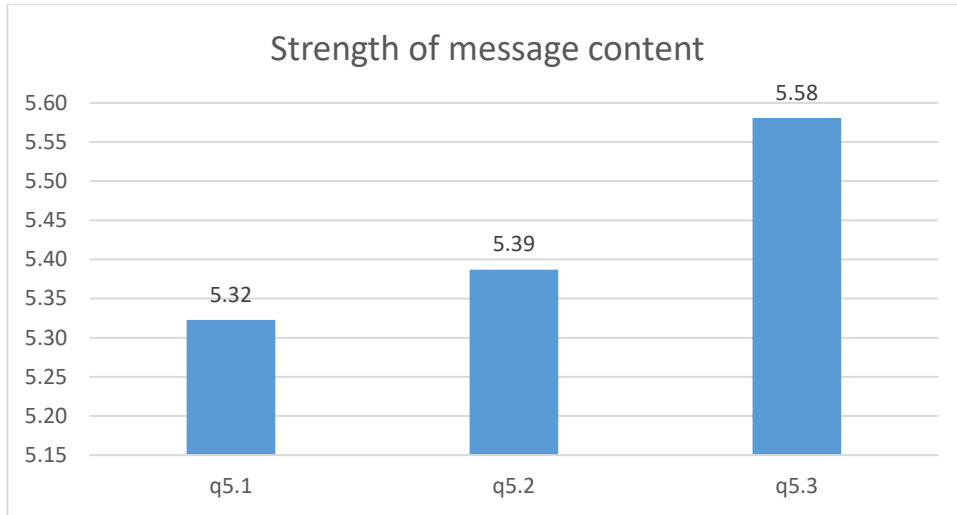


Figure 10 Strength of message delivery statistics

The column chart shows that q5.3 has the highest ranking level of 5.58 out of 1-7 scale. Q5.3 is followed by q5.2 and q5.1 of 5.39 and 5.32 respectively. Overall there is not a significant difference in the result and the numbers show that the message delivery of the recommendations were perceived as strong, powerful and important.

Involvement

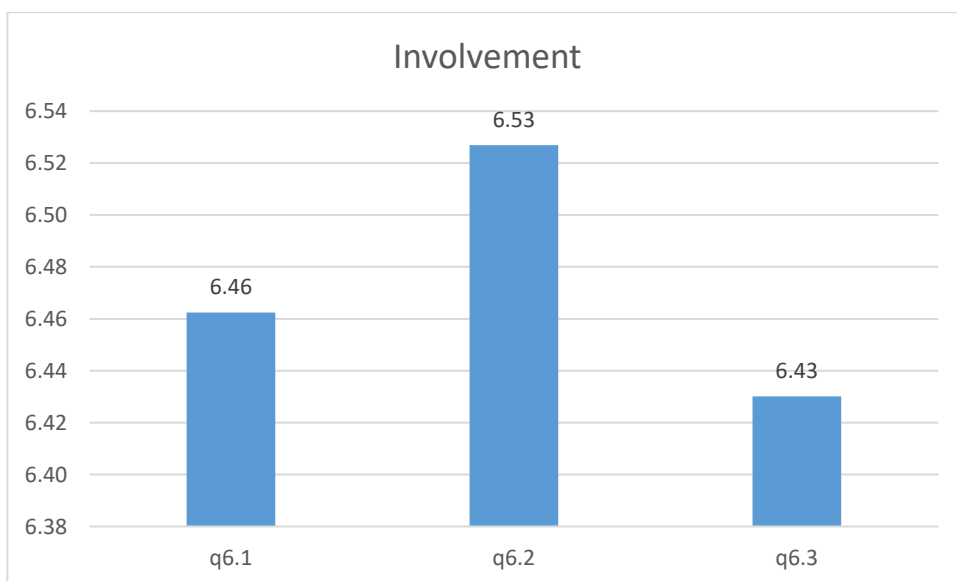


Figure 11 Involvement statistics

The figure above depicts that q6.2 has the highest level of ranking of 6.53 out of 1-7 scale. Q6.2 is followed by q6.1 and q6.3 of 6.46 and 6.43 respectively. All in all, there is not a significant difference in the mean results of these three questions. Moreover, the high mean yielded results indicate that the message receivers were perceived as taking HIV prevention seriously prior to the recommendation of PrEP.

Homophily

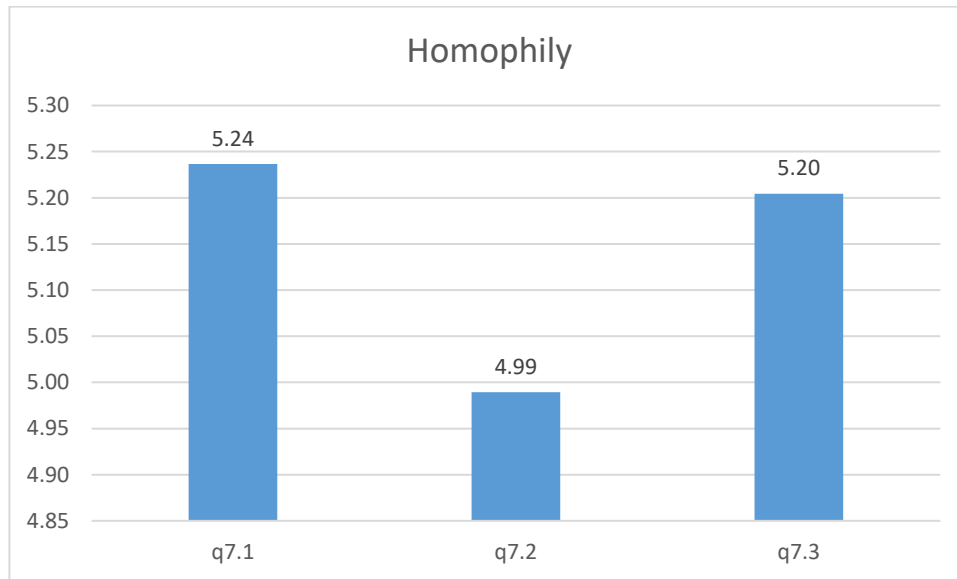


Figure 12 Homophily statistics

The column chart above manifests that q7.1 has the highest ranking level of 5.24 out of 1-7 scale. Q7.1 is followed by q7.3 and q7.2 of 5.20 and 4.99 respectively. According to this, there is not a significant difference between the results. In other words, the message senders and message receivers were perceived to have things in common on a moderate to high degree.

5.3 Reliability test

Run reliability analysis in SPSS

Table 2 Reliability test

| No | Factor | Cronblach's alpha | The greatest Cronbach's Alpha if item deleted | The smallest corrected item-total correlation |
|----|-----------------------------|-------------------|---|---|
| 1 | WOM influence | 0.920 | 0.900 | 0.819 |
| 2 | Expertise | 0.935 | 0.927 | 0.845 |
| 3 | Trustworthiness | 0.930 | 0.918 | 0.806 |
| 4 | Richness of message content | 0.816 | 0.829 | 0.588 |

| | | | | |
|---|------------------------------|-------|-------|-------|
| 5 | Strength of message delivery | 0.874 | 0.871 | 0.704 |
| 6 | Homophily | 0.849 | 0.827 | 0.679 |
| 7 | Involvement | 0.882 | 0.867 | 0.736 |

WOM influence met the requirement of reliability test due to the following reasons:

- Cronbach's alpha: $0.902 > 0.7$
- All three variables have 'Corrected Item-total correlation' higher than 0.3
- All three variables have 'Cronbach's alpha if Item Deleted' lower than 0.920

Expertise met the requirement of reliability test due to the following reasons:

- Cronbach's alpha: $0.935 > 0.7$
- All three variables have 'Corrected Item-total correlation' higher than 0.3
- All three variables have 'Cronbach's alpha if Item Deleted' lower than 0.935

Trustworthiness met the requirement of reliability test due to the following reasons:

- Cronbach's alpha: $0.930 > 0.7$
- All three variables have 'Corrected Item-total correlation' higher than 0.3
- All three variables have 'Cronbach's alpha if Item Deleted' lower than 0.930

Richness of message content, one variable did not meet the requirement of reliability test due to the following reasons:

- Cronbach's alpha: $0.816 > 0.7$
- All three variables have 'Corrected Item-total correlation' higher than 0.3
- The variable q4.1 has 'Cronbach's alpha if Item Deleted' of 0.829 which is bigger than 0.816. Therefore, the item q4.1 was eliminated from the variable pool.

Strength of message delivery met the requirement of reliability test due to the following reasons:

- Cronbach's alpha: $0.874 > 0.7$
- All three variables have 'Corrected Item-total correlation' higher than 0.3
- All three variables have 'Cronbach's alpha if Item Deleted' lower than 0.874

Homophily met the requirement of reliability test due to the following reasons:

- Cronbach's alpha: $0.849 > 0.7$
- All three variables have 'Corrected Item-total correlation' higher than 0.3

- All three variables have 'Cronbach's alpha if Item Deleted' lower than 0.849

Involvement met the requirement of reliability test due to the following reasons:

- Cronbach's alpha: $0.882 > 0.7$
- All three variables have 'Corrected Item-total correlation' higher than 0.3
- All three variables have 'Cronbach's alpha if Item Deleted' lower than 0.882

5.4 Exploratory Factor Analysis

First try

Table 3 EFA first try findings

| | Value | Comparison |
|-----------------------------------|---------|-------------------|
| KMO | 0.813 | $0.5 < 0.813 < 1$ |
| Sig. in Bartlett's Test | 0.000 | $0.000 < 0.05$ |
| Rotation Sums of Squared Loadings | 76.286% | $76.286\% > 50\%$ |
| Eigenvalue | 1.071 | $1.071 > 1$ |

The table can be explained as followed:

- $KMO = 0.813$ which explains that exploratory factor analysis is suitable.
- Sig. in Bartlett's test = 0.000 indicates the correlation between the variables are well supported.
- Rotation Sums of Squared Loadings = 76.286% means that 6 newly created factors explain for 76.286% of all the variables.
- Eigenvalue = 1.071 which indicates that newly created factors are well supported.

Table 4 EFA first try rotated pattern matrix

Pattern Matrix^a

Factor

| | 1 | 2 | 3 | 4 | 5 | 6 |
|------|-------|---|------|------|---|---|
| q1.1 | | | | .813 | | |
| q1.2 | | | | .973 | | |
| q1.3 | | | | .828 | | |
| q2.1 | | | .910 | | | |
| q2.2 | | | .939 | | | |
| q2.3 | | | .943 | | | |
| q3.1 | 1.017 | | | | | |

| | | | | | | |
|------|-------|-------|--|--|------|------|
| q3.2 | .633 | | | | | |
| q3.3 | 1.016 | | | | | |
| q3.4 | .589 | | | | | |
| q4.2 | .307 | .384 | | | | |
| q4.3 | | .519 | | | | |
| q5.1 | | .841 | | | | |
| q5.2 | | 1.048 | | | | |
| q5.3 | | .740 | | | .341 | |
| q6.1 | | | | | | .784 |
| q6.2 | | | | | | .820 |
| q6.3 | | | | | | .886 |
| q7.1 | | | | | .977 | |
| q7.2 | | | | | .708 | |
| q7.3 | | | | | .811 | |

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Observed from the table above, q4.2 has the 2 values in which the subtraction of their value is less than 0.3 and therefore needed to be eliminated from the variable pool. Although q5.3 has values on 2 factors, it was still kept because the difference between 2 values are bigger than 0.3. Apart from the 2 unusual variables, the rest has value of more than 0.3 which was suitable for the second trial of Exploratory Factor Analysis.

Second try

Table 5 EFA second rotated pattern matrix

Pattern Matrix^a

| | Factor | | | | | |
|------|--------|------|------|------|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| q1.1 | | | | .808 | | |
| q1.2 | | | | .969 | | |
| q1.3 | | | | .822 | | |
| q2.1 | | .906 | | | | |
| q2.2 | | .930 | | | | |
| q2.3 | | .936 | | | | |
| q3.1 | 1.000 | | | | | |
| q3.2 | .625 | | | | | |
| q3.3 | .993 | | | | | |
| q3.4 | .580 | | | | | |
| q4.3 | | | .490 | | | |

| | | | | | | |
|------|--|--|-------|--|------|------|
| q5.1 | | | .804 | | | |
| q5.2 | | | 1.038 | | | |
| q5.3 | | | .706 | | .343 | |
| q6.1 | | | | | | .774 |
| q6.2 | | | | | | .807 |
| q6.3 | | | | | | .884 |
| q7.1 | | | | | .980 | |
| q7.2 | | | | | .704 | |
| q7.3 | | | | | .796 | |

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

All values above are bigger than 0.3 and hence they are all kept.

Although q5.3 has values in 2 factors, it was still kept for further analysis because the difference ($0.706 - 0.343 = 0.363$) is bigger than 0.3 and the variable was categorized in factor 3 due to higher value.

As can be seen, q4.3, q5.1, q5.2, q5.3 are in the same factor. Originally they were respectively categorized as 'richness of message content' and 'strength of message delivery'. After this 2nd trial, they were grouped into the same factor named 'Strength and richness of message delivery'.

Table 6 EFA second try findings

| | Value | Comparison |
|-----------------------------------|---------|-------------------|
| KMO | 0.816 | $0.5 < 0.816 < 1$ |
| Sig. in Bartlett's Test | 0.000 | $0.000 < 0.05$ |
| Rotation Sums of Squared Loadings | 77.161% | $77.161\% > 50\%$ |
| Eigenvalue | 1.069 | $1.069 > 1$ |

The table can be explained as followed:

- KMO = 0.813 which explains that exploratory factor analysis is suitable.
- Sig. in Bartlett's test = 0.000 indicates the correlation between the variables are well supported.
- Rotation Sums of Squared Loadings = 77.161% means that 6 newly created factors explain for 77.161% of all the variables.
- Eigenvalue = 1.069 which indicates that newly created factors are suitable.

- All variables have factor loadings bigger than 0.5 and are well grouped into 6 factors

In other words, 20 independent variables are grouped in 6 different few factors after the second exploratory factor analysis trial. The new factors are represented in newly created variables labeled Z1, Z2, Z3, Z4, Z5 and Y. The new variables were created based on the mean of variables that represent each question in each latent variable, and depicted in the following table.

Table 7 New labels for new latent variables

| Factors | Labels | Variables | Labels |
|-----------------|--------|---|--------|
| WOM influence | Y | In your opinion, did the recommendation have an influence on your decision to go on PrEP? | Q1.1 |
| | | To what extend was your decision to go on PrEP influenced by the recommendation? | Q1.2 |
| | | To what extend was your decision to go on PrEP influenced by the recommendation? | Q1.3 |
| Expertise | Z1 | What level of expertise about PrEP do you consider the message sender possessed? | Q2.1 |
| | | In your opinion, how experienced was the message sender about PrEP topic? | Q2.2 |
| | | In your opinion, how knowledgeable the message sender was about PrEP? | Q2.3 |
| Trustworthiness | Z2 | How honest do you consider the message sender was? | Q3.1 |

| | | | |
|---|----|---|------|
| | | How reliable do you consider the message sender was? | Q3.2 |
| | | How sincere do you consider the message sender was? | Q3.3 |
| | | How trustworthy do you consider the message sender was? | Q3.4 |
| Strength and richness of message delivery | Z3 | In your opinion, how specific was the recommendation? | Q4.3 |
| | | You think that the message delivery had a powerful tone? | Q5.1 |
| | | You think that the message content was delivered in a strong way? | Q5.2 |
| | | You think that the message was delivered in an important manner? | Q5.3 |
| Involvement | Z4 | How important did you consider HIV prevention was prior to PrEP recommendation? | Q6.1 |
| | | How relevant did you consider HIV prevention was prior to PrEP recommendation? | Q6.2 |
| | | How valuable did you consider HIV prevention was prior to PrEP recommendation? | Q6.3 |

| | | | |
|-----------|----|---|------|
| Homophily | Z5 | Considering your outlook on life how similar are you to the message sender? | Q7.1 |
| | | Considering your likes and dislikes, how similar are you and the person? | Q7.2 |
| | | Considering your values, how similar are you and the person? | Q7.3 |

After this analysis, an adjusted theoretical framework was constructed

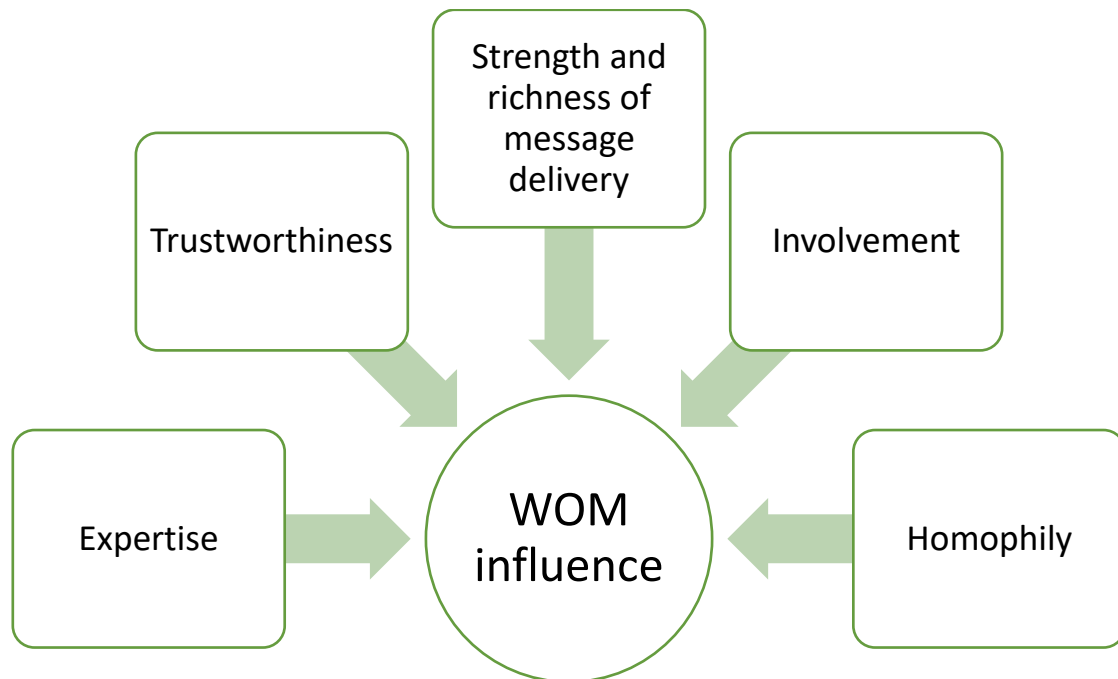


Figure 13 Adjusted theoretical framework

5.5 Correlation analysis

Pearson Correlation analysis

Table 8 Pearson correlation analysis

| | | Z1 | Z2 | Z3 | Z4 | Z5 |
|---|---------------------|------|------|------|------|------|
| Y | Pearson Correlation | .460 | .348 | .405 | .204 | .417 |
| | Sig. (2-tailed) | .000 | .001 | .000 | .050 | .000 |

This correlation objective was achieved by bivariate pearson two tail test in SPSS. By looking at the table, the significance of the relationship between variables can be determined. Z1, Z2, Z3, Z4, Z5 are less than 0.05 which indicates the significance of the data set but Z4 has sig. of 0.05 which is just equal to 0.05. Therefore, Z4 is arguably not significant but it is still kept for hypothesis testing. Following is the scale model which was suggested by Davis (1971) is used to clarify the relationship between the variables:

- 0.7 and above – high correlation
- 0.4 -0.69 – moderate correlation
- 0 – 0.49 – low relationship

Based on this scale, it is plausible to conclude that:

- H1: Expertise is moderately related to WOM influence with correlation of 0.460
- H2: Trustworthiness is poorly related to WOM influence with correlation of 0.348
- H3: Strength and richness of message delivery is moderately related to WOM influence with correlation of 0.405
- H4: Involvement is poorly related to WOM influence with correlation of 0.204
- H5: Homophily is moderately related to WOM influence with correlation of 0.417

Thence, research question 2 is answered.

5.6 Multiple regression analysis and hypothesis testing

Multiple regression analysis depicts the influential level of independent factors to the dependent factor in order to reconfirm the hypotheses.

- Hypothesis 1: Expertise positively impacts WOM influence
- Hypothesis 2: Trustworthiness positively impacts WOM influence
- Hypothesis 3: Strength and richness of message delivery positively impacts WOM influence
- Hypothesis 4: Involvement of message delivery positively impacts WOM influence
- Hypothesis 5: Homophily positively impacts WOM influence

By deploying the linear regression analysis in SPSS with 5 independent factors (Z1, Z2, Z3, Z4 and Z5) and the dependent factor Y using 'Enter' method, the following results were obtained:

Table 9 Regression analysis coefficients

| Factor | Standardized Coefficients Beta | Sig. |
|--------|--------------------------------|-------|
| Z1 | .245 | 0.030 |
| Z2 | -.018 | 0.879 |
| Z3 | .211 | 0.040 |
| Z4 | .096 | 0.316 |
| Z5 | .249 | 0.032 |

Hypothesis 1 testing result

The table above reconfirms Hypothesis 1: Expertise positively impacts WOM influence

- Standardised Coefficient Beta = 0.246 which depicts the same direction correlation with the model
- Sig. = 0.030 < 0.05, therefore the result obtained is significant

Thus, hypothesis H1 was supported.

Hypothesis 2 testing result

The table above reconfirms Hypothesis 2: Trustworthiness positively impacts WOM influence

- Standardised Coefficient Beta = -0.018 which does not depict the same direction correlation with the model
- Sig. = 0.897 > 0.05, therefore the result obtained is not significant

Thus, hypothesis H2 was not supported.

Hypothesis 3 testing result

The table above reconfirms Hypothesis 3: Strength and richness of message delivery positively impacts WOM influence

- Standardised Coefficient Beta = 0.211 which depicts the same direction correlation with the model
- Sig. = 0.040 < 0.05, therefore the result obtained is significant

Thus, hypothesis H3 was supported.

Hypothesis 4 testing result

The table above reconfirms Hypothesis 4: involvement positively impacts WOM influence

- Standardised Coefficient Beta = 0.096 which depicts the same direction correlation with the model
- Sig. = 0.316 > 0.5, therefore the result obtained is not significant and the null hypothesis of rejection is accepted

Thus, hypothesis H4 was not supported.

Hypothesis 5 testing result

The table above reconfirms Hypothesis 5: Homophily positively impacts WOM influence

- Standardised Coefficient Beta = 0.249 which depicts the same direction correlation with the model
- Sig. = 0.032 < 0.05, therefore the result obtained is significant

Thus, hypothesis H5 was supported.

After eliminating factor Z2 and Z4, the linear regression analysis in SPSS was run again and the following table is obtained:

Table 10 Shortlisted factors

| Factor | Standardized Coefficients Beta | Sig. |
|--------|--------------------------------|-------|
| Z1 | .255 | 0.018 |
| Z3 | .230 | 0.021 |
| Z5 | .232 | 0.023 |

According to this result, factors Z1, Z3 and Z5 are still statistically significant. In other words, expertise, strength and richness, homophily impact and are directly proportional to WOM influence in PrEP recommendation.

6 DISCUSSION

6.1 Result findings

According to the result of the background information, the majority of PrEP users who received recommendation are located in America, Oceania & Pacific Ocean and Europe. Most of the respondents are Caucasians who identified as gay.

In the beginning, there were 6 factors hypothesized to influence WOM namely Expertise, Trustworthiness, Richness of message content, Strength of message delivery, Involvement and Homophily. The descriptive statistics reaffirms that the dependent factor WOM is perceived as influential in the recommendation of PrEP helping the message receivers to make a decision. On top of that, descriptive statistics showed that the message senders are perceived as trustworthy and have expertise about the topic of PrEP. The messages were perceived as rich and strong. The message receivers considered to have many things in common with the message sender. The message receiver considered HIV prevention important prior to going on PrEP. Following Cronbach's Alpha test, question 4.1 'How informative do you consider the recommendation was?' in the richness of message content category was eliminated. Exploratory factor analysis was run twice. In the first trial, question 4.2 'In your opinion, how clear was the recommendation?' was eliminated. After the second trial of exploratory factor analysis, the variables were regrouped into 6 categories instead of 7 initially. The only change was the factor 'Strength and richness of message delivery' derived from 2 separate factors initially 'Richness of message content' and 'strength of message delivery'.

Following multiple regression analysis, WOM is found to be influenced by only 3 factors instead of 5 hypothesized factors, namely Expertise, Strength and richness of message delivery and Homophily. Therefore, hypothesis 1, 3 and 5 were accepted. Despite descriptive statistics indicated high value of Trustworthiness and Involvement, they were not found to influence WOM. This manifests that although message receivers perceived that they could trust the message sender and consider HIV prevention important, they do not influence the impact of recommendation about PrEP. After Pearson Correlation analysis, it was found that Expertise has the strongest influence on WOM following by Homophily and Strength & richness of message delivery. All three factors influence WOM moderately.

6.2 Implications

First and foremost, Expertise was found to positively influence recommendation about PrEP, therefore Gilead Sciences Inc. can potentially improve WOM effectiveness among probable targets by focusing on knowledge, expertise and experience. The company can achieve this by investing in marketing the medicine to health care professionals. It is plausible to assume that a recommendation from a doctor or a nurse is perceived as credible and reliable since they have the medical knowledge in the medication they talk about, they have seen and treated patients to gain the experience about the medication. According to the result of the open question in the questionnaire asking 'Who was the person that recommended PrEP to you?', more than 20 answers (21%) indicated someone from a medical background like doctors, nurses, healthcare worker/activists, etc. A study by Rowniak S (2015) found that 'nurse practitioners are in an ideal position to be the gatekeepers for information and access to PrEP'. According to Staton T (2015), Gilead Sciences is criticized for not marketing enough Truvada used as PrEP to healthcare professionals despite the drug has been approved by the FDA and backed by the U.S. Centers for Disease Control. The article also stated that many doctors do not know about the drug used as HIV prevention method. Ironically and contradictorily, the patients and the community activists need to educate the doctors about PrEP. Jim Pickett of the AIDS Foundation of Chicago stated Gilead provide funding for educational purposes in the community scope, however information about PrEP would spread faster if primary doctors were to know about the drug. According to a recent study, only fewer than 1 out of 10 eligible for PrEP according to CDC guidelines were using and adhering to the medicine. Therefore, one of the recommendations of this study is urging healthcare professionals to address the gap between patients eligible for PrEP and patients who use the medication (Parsons JT, et al., 2017). This alarming fact indicates that there are more demands for the drug than actual supply and this can be addressed by marketing to healthcare professionals which in turn improves 'Expertise' that is found to positively influence WOM and recommendation about PrEP, helping the consumers to make autonomous decisions about going on the medication.

Secondly, Gilead Sciences can improve WOM influence and recommendation by focusing on strength and richness of message content. It is recommended by Gilead Sciences enriching their informational marketing materials by utilising imagery-evoking

messages like stories. Stories are considered as essential for imagery-evoking messages that tend to impact receivers' decision making (Mazzarol et al., 2007; Escalas, 2007). For example, the case study presented in the study of Rowniak S (2015) would portrait as delivering an important, strong, powerful and specific message. Beside the details told in a story, message sender should focus on delivering the message so that the story is emotionally appealing. The story talked about a transwoman who lost her job and had to do sex work to make end meets. She was in the high risk group to contract HIV. Despite being told about PrEP in the sexual health clinic, it was too late as she had already contracted HIV. Had this woman known about PrEP earlier, she could have avoided contracted HIV. This is only one out of many stories to be told. Gilead Sciences can inform this story telling strategy to healthcare professionals so they can use it on their patients. Another promotional strategy could be that the company can sponsor influential people like healthcare activists to publish their stories and journeys using PrEP in terms of how the drug has helped their lives and the lives of their friends and families.

Lastly, homophily factor can be improved in order to positively impact WOM and recommendation about PrEP as HIV prevention method. Gilead Sciences can reach out to their target by focusing on the similarity between potential consumers and existing ones. Existing consumers have experienced the medicine and therefore it is assumed that potential consumers would perceive the message as unbiased. So how can the company connect existing consumers to potential ones? It is proposed that Gilead funds a variety of patient advocacy groups and communities to strengthen the sense of togetherness. According to their website, they have already funded a variety of NGOs health organisations such as: Association for the advancement of Mexican Americans, National Black Justice Coalition, National Coalition of STD Directors, The Black Women's Health imperative, Cascade AIDS Project, etc. (Gilead Sciences Inc, company statement). Through these communities and organisations, PrEP can be promoted as the newest HIV prevention in their offline meetings, events and online materials. More importantly, the message would perceivably come across as less biased from the local communities and organisations that are trusted. People who belong to certain patient advocacy group tend to share something in common. For example, it could be the empathy for people living with HIV, the passion to prevent HIV infection or the drive to eradicate stigma towards the HIV community. These similarities are proposed to potentially impact the WOM and recommendation about using PrEP,

persuading more patients in need of this new HIV prophylaxis method and hence expand the number of consumers. In fact, the majority of HIV prevention and PrEP awareness efforts have been carried out by community-based HIV and AIDS organizations (Eaton AL, 2015). Another prove to this claim is the result of the open question in the questionnaire of who the respondents received the recommendation of PrEP from; most of answers were people who had something in common with the receivers such as friends, family members, sexual partners, community advocates, speakers at patient advocacy events, etc.

6.3 Strengths and weaknesses and recommendations

On the one hand, this study encountered a few obstacles leading a variety of weaknesses in the research. Firstly, the sample size in this study is relatively small, and therefore can not be representative of the whole population. According to Highleyman L (2016), there are about more than 79,000 PrEP users in the U.S. alone, presented in the 21st International AIDS Conference. There are many reasons why a larger sample could not be collected despite best effort. The survey was posted on the Facebook group of more than 15,000 members, and the group's discussion is very busy. Each post posted does not get to stay long enough to catch the attention of potential respondents. The questionnaire from this study was not exclusive to this hindrance. The researcher had to ask permission from the group's admin multiple times to re-post the questionnaire. Secondly, the findings of the study are dependent on the respondents' memories which can be considered as bias. Thirdly, the survey was distributed online through a Facebook group, and therefore the researcher had no influence over who in the group took part in the survey. Consequently, a degree of false information could have been given. Lastly, the questionnaire is only targeting current PrEP users who accepted WOM recommendations, which permits the researcher to measure the influence of WOM directly. However, those who are not on PrEP or those who are planning to go on PrEP in the future were not included in the research. WOM influence can still improve these groups of non-PrEP users' attitude. For this reason, further research may be required to explore these other categories of PrEP potential consumers. Moreover, many members also commented that they were using the medication but did not receive any specific recommendation to be able to answer the questionnaire with accuracy.

Due to the weaknesses listed above, suggestions for further research are made as followed:

Instead of conducting an online survey through the Facebook group, further studies regarding WOM influence about PrEP can be conducted right in the clinical environment where patients are treated. In this way, it can be certain of who are truly using the medication which eliminates a degree of errors in the survey. Currently, there are a few clinical trials for PrEP which are the IPrEx study, Partners PrEP, Fem- PrEP, VOICE and the Bangkok Tenofovir Study. These trials can offer good opportunities for further studies of WOM influence of PrEP due to access to the pool of more than 17,700 PrEP users, hence provides a much larger sample size (Men Prepfacts).

The questionnaire in this study did not specify a time frame of how long the recommendation received must be in which could also contribute to a higher degree of error in the results since an old memory might not be accurate. Therefore, further studies should be specific that only recent recommendations from 3 to 6 months are to be taken into account. In this study, the researcher already struggled to collect 94 answers let alone adding more conditions to the questionnaire.

On the other hand, a few strengths of the study are to be mentioned. Firstly, despite the non-probability method that does not indicate statistical significance (Cohen et al., 2007), the convenience and voluntary sampling method used in this study is still arguably suitable. The nature of the study only concerns patients who are on PrEP and received recommendations for the medication; therefore, it was impossible to execute a random survey given the obstacles of access to a larger pool of suitable candidates.

Hence, the researcher had to selectively specify certain conditions for the respondents to take part in the survey which facilitated a non-probability sampling method.

Despite many rules of thumb regarding minimum and recommended sample size in Factor Analysis, these rules are generally not valid and useful (Zhao N, 2009). This study only recruited 94 respondents which is arguably small. However, following the result of the analysis of Cronbach's Alpha and Exploratory Factor Analysis, it is manifested that the data is suitable and reliable. Therefore, it is plausible to conclude that the study can be replicated by further research. Moreover, the theoretical framework and questionnaire had already been successfully used in the study of Akira and Yong (2016) which acts as a precursor to the reliability of this study. On top of that, although Akira's study and this study concern two different contexts, both measure the

WOM influence and anchored the questionnaire towards the same kind of target audience which are the message receivers.

Furthermore, it can be argued that the questionnaire in this study measured what it was supposed to measure since the similar questionnaire was successfully applied in Akira's study. After the second trial of EFA, all variables were neatly organized a similar order as that of the hypothesized model despite a few components had been dropped. This result of EFA also fortifies the validity of this study. In other words, further studies about WOM influence of PrEP recommendation should still adopt the theoretical framework and the questionnaire presented in the study of Akira and Young (2016).

7 SUMMARY AND CONCLUSION

The thesis revolves around the concept of WOM (Word-of-Mouth) influence and recommendation which has been researched to be impacted by the characteristics of message sender (expertise and trustworthiness), the message (richness of message content and strength of message delivery), homophily and involvement. The research model and the questionnaire adapted by this study are based on the study of Akira and Yong (2016) that also explored the WOM influence. By using the ready model, the objectives of this study were to identify which factors impact WOM influence in the marketing of prescription medication and to what extent these impacts are. The case chosen for this study is PrEP (Pre-exposure prophylaxis), a HIV prevention medication. This research can be used as a reference for other studies focusing on WOM marketing either in healthcare or other industries. The healthcare marketers can replicate the same approach to WOM marketing as the suggestion of this study or use the findings as references for further relevant investigations of other aspects of WOM. As an example, given the limited resources for direct – to – consumer marketing in some healthcare settings, one drug producer or healthcare provider can alternatively look at proven effective WOM marketing strategies to recruit potential consumers.

As mentioned, this research only examined WOM influence from the message receivers' perspectives and especially only those who are using the medication and accepted recommendations for PrEP. WOM influence can still investigate those who are

not using the medication, those who reject using the medication and those who are planning to use the medication. Further research models of WOM can also include factors seen as obstacles like cost, peer pressure and social challenges. The message senders also play an important role in WOM influence and therefore should not be ignored in further investigation.

Following the analysis of this study, some conclusions are derived in response to the research questions given that the hypothetical entire population is considered. Due to the obstacles of obtaining a larger sample size and the non-probability sampling method, it is unlikely that generalizations can be made about the entire population.

Firstly, it was resulted that expertise positively and moderately impact WOM influence in the recommendation of PrEP. Thus, Gilead Sciences, the drug producer, is proposed to market the medicine to healthcare professionals such as doctors, nurses and healthcare activists.

Secondly, it was found that strength and richness of message content positively and moderately impact WOM influence in the recommendation of PrEP. Hence, it is recommended that the company inform healthcare professionals to use story telling strategy on the patients. Story telling was researched to be imagery-evoking which can potentially convey the message as vivid, deep and emotional.

Finally, the findings depicted a positive and moderate relationship between homophily and WOM influence in the recommendation of PrEP. As a result, the company should fund patient advocacy groups and communities as gateway to market the medicine since research manifests that recommendations tend to happen between people of similar interests and backgrounds.

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APPENDIX

Appendix 1. The questionnaire

Survey about PrEP recommendation for PrEP users: recall a recommendation for PrEP

Thank you for taking part in this university research project, your participation is highly appreciated! This questionnaire has been developed to assist the research of a Bachelor's Degree thesis in international business about the determinants of Word Of Mouth in PrEP recommendation at Arcada University of Applied Sciences in Helsinki, Finland. Please recall a recommendation about PrEP before you decided to go on it. The recommendation can be face to face or virtual messages in the form of verbal or text. The survey is designed only for people who are currently using PrEP (Pre-exposure prophylaxis) and accepted the recommendation. All responses are strictly confidential and anonymous. By taking part in this survey, you give informed consent for the researcher to use the given answers for the study. The result of this questionnaire is stored on google forms by the account of the researcher in which only the researcher and authorized supervisors of Arcada have access to. Please be aware that due to the anonymity nature of the research, participants are not able to withdraw their answers once submitted. Should you have any questions regarding the survey, please message by Facebook or comment on the post for quick response or send me an email at

leanhqua@arcada.fi

Part I

Where are you located? *

- America
- Europe
- Asia
- Africa
- Russia
- Middle eastern
- Oceania/Pacific ocean (Australia, New zealand)
- Other

What is your ethnicity? *

- Asian
- Black
- Caucasian
- Hispanic
- Mixed
- Other

What is your sexual identity? *

- Gay
- Lesbian
- Heterosexual man
- Heterosexual women
- Bisexual
- Transgender M2F
- Transgender F2M
- Other

Part III

Who was the person that recommended PrEP to you?

Eg: Doctor, nurse, family members, etc

Appendix 2: Statistical Analysis

Reliability test

WOM influence

| Case Processing Summary | | | |
|-------------------------|-----------------------|----|-------|
| | | N | % |
| Cases | Valid | 93 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 93 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .920 | 3 |

Item Statistics

| | Mean | Std. Deviation | N |
|------|------|----------------|----|
| q1.1 | 5.60 | 1.629 | 93 |
| q1.2 | 5.30 | 1.634 | 93 |
| q1.3 | 5.66 | 1.632 | 93 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| q1.1 | 10.96 | 9.694 | .819 | .900 |
| q1.2 | 11.26 | 9.302 | .872 | .857 |
| q1.3 | 10.90 | 9.654 | .823 | .897 |

Expertise

Case Processing Summary

| | | N | % |
|-------|-----------------------|----|-------|
| Cases | Valid | 93 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 93 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .935 | 3 |

Item Statistics

| | Mean | Std. Deviation | N |
|------|------|----------------|----|
| q2.1 | 5.82 | 1.251 | 93 |
| q2.2 | 5.74 | 1.496 | 93 |
| q2.3 | 5.76 | 1.440 | 93 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| q2.1 | 11.51 | 8.035 | .845 | .927 |
| q2.2 | 11.58 | 6.616 | .876 | .900 |
| q2.3 | 11.56 | 6.814 | .891 | .884 |

Trustworthiness

| Case Processing Summary | | | |
|--------------------------------|-----------------------|----|-------|
| | | N | % |
| Cases | Valid | 93 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 93 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .930 | 4 |

Item Statistics

| | Mean | Std. Deviation | N |
|------|------|----------------|----|
| q3.1 | 6.58 | 1.004 | 93 |
| q3.2 | 6.38 | 1.188 | 93 |
| q3.3 | 6.60 | .957 | 93 |
| q3.4 | 6.43 | 1.015 | 93 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| q3.1 | 19.41 | 8.418 | .858 | .902 |
| q3.2 | 19.61 | 7.501 | .847 | .909 |
| q3.3 | 19.39 | 8.696 | .852 | .905 |
| q3.4 | 19.56 | 8.597 | .806 | .918 |

Richness of message content

Case Processing Summary

| | | N | % |
|-------|-----------------------|----|-------|
| Cases | Valid | 93 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 93 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .816 | 3 |

Item Statistics

| | Mean | Std. Deviation | N |
|------|------|----------------|----|
| q4.1 | 6.08 | 1.191 | 93 |
| q4.2 | 6.23 | 1.033 | 93 |
| q4.3 | 5.97 | 1.238 | 93 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| q4.1 | 12.19 | 4.440 | .588 | .829 |
| q4.2 | 12.04 | 4.542 | .726 | .701 |
| q4.3 | 12.30 | 3.843 | .707 | .706 |

Strength of message delivery

| Case Processing Summary | | | |
|--------------------------------|-----------------------|----|-------|
| | | N | % |
| Cases | Valid | 93 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 93 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .874 | 3 |

Item Statistics

| | Mean | Std. Deviation | N |
|------|------|----------------|----|
| q5.1 | 5.32 | 1.512 | 93 |
| q5.2 | 5.39 | 1.467 | 93 |
| q5.3 | 5.58 | 1.556 | 93 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| q5.1 | 10.97 | 7.814 | .748 | .830 |
| q5.2 | 10.90 | 7.610 | .823 | .763 |
| q5.3 | 10.71 | 7.860 | .704 | .871 |

Homophily

Case Processing Summary

| | | N | % |
|-------|-----------------------|----|-------|
| Cases | Valid | 93 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 93 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .849 | 3 |

Item Statistics

| | Mean | Std. Deviation | N |
|------|------|----------------|----|
| q6.1 | 6.46 | 1.059 | 93 |
| q6.2 | 6.53 | .951 | 93 |
| q6.3 | 6.43 | 1.026 | 93 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| q6.1 | 12.96 | 3.302 | .694 | .815 |
| q6.2 | 12.89 | 3.706 | .679 | .827 |
| q6.3 | 12.99 | 3.163 | .789 | .720 |

Involvement

Case Processing Summary

| | | N | % |
|-------|-----------------------|----|-------|
| Cases | Valid | 93 | 100.0 |
| | Excluded ^a | 0 | .0 |
| | Total | 93 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

| Cronbach's Alpha | N of Items |
|------------------|------------|
| .882 | 3 |

Item Statistics

| | Mean | Std. Deviation | N |
|------|------|----------------|----|
| q7.1 | 5.24 | 1.402 | 93 |
| q7.2 | 4.99 | 1.290 | 93 |
| q7.3 | 5.20 | 1.493 | 93 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|------|----------------------------|--------------------------------|----------------------------------|----------------------------------|
| q7.1 | 10.19 | 6.527 | .800 | .807 |
| q7.2 | 10.44 | 7.401 | .736 | .867 |
| q7.3 | 10.23 | 6.155 | .788 | .821 |

Exploratory Factor Analysis

First try

KMO and Bartlett's Test

| | | |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .813 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1672.432 |
| | df | 210 |
| | Sig. | .000 |

Total Variance Explained

| Factor | Total | Initial Eigenvalues | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings ^a |
|--------|-------|---------------------|--------------|-------------------------------------|---------------|--------------|--|
| | | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 8.381 | 39.909 | 39.909 | 7.956 | 37.884 | 37.884 | 5.744 |
| 2 | 2.559 | 12.184 | 52.093 | 2.126 | 10.123 | 48.007 | 4.750 |
| 3 | 2.155 | 10.261 | 62.354 | 1.799 | 8.569 | 56.576 | 5.662 |
| 4 | 1.703 | 8.108 | 70.462 | 1.344 | 6.401 | 62.977 | 4.488 |
| 5 | 1.472 | 7.011 | 77.473 | 1.792 | 8.535 | 71.512 | 5.266 |
| 6 | 1.071 | 5.099 | 82.571 | 1.003 | 4.774 | 76.286 | 3.161 |
| 7 | .626 | 2.979 | 85.550 | | | | |
| 8 | .556 | 2.650 | 88.200 | | | | |
| 9 | .413 | 1.966 | 90.166 | | | | |
| 10 | .310 | 1.476 | 91.642 | | | | |
| 11 | .280 | 1.334 | 92.976 | | | | |
| 12 | .273 | 1.298 | 94.274 | | | | |
| 13 | .246 | 1.170 | 95.443 | | | | |
| 14 | .194 | .924 | 96.367 | | | | |
| 15 | .159 | .758 | 97.125 | | | | |
| 16 | .146 | .697 | 97.823 | | | | |
| 17 | .120 | .572 | 98.395 | | | | |
| 18 | .118 | .563 | 98.958 | | | | |
| 19 | .098 | .466 | 99.424 | | | | |
| 20 | .068 | .324 | 99.748 | | | | |
| 21 | .053 | .252 | 100.000 | | | | |

Pattern Matrix^a

| | Factor | | | | | |
|------|--------|-------|------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| q1.1 | | | | .813 | | |
| q1.2 | | | | .973 | | |
| q1.3 | | | | .828 | | |
| q2.1 | | | .910 | | | |
| q2.2 | | | .939 | | | |
| q2.3 | | | .943 | | | |
| q3.1 | 1.017 | | | | | |
| q3.2 | .633 | | | | | |
| q3.3 | 1.016 | | | | | |
| q3.4 | .589 | | | | | |
| q4.2 | .307 | .384 | | | | |
| q4.3 | | .519 | | | | |
| q5.1 | | .841 | | | | |
| q5.2 | | 1.048 | | | | |
| q5.3 | | .740 | | | .341 | |
| q6.1 | | | | | | .784 |
| q6.2 | | | | | | .820 |
| q6.3 | | | | | | .886 |
| q7.1 | | | | | .977 | |
| q7.2 | | | | | .708 | |
| q7.3 | | | | | .811 | |

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.^a

a. Rotation converged in 6 iterations.

Second try:

KMO and Bartlett's Test

| | | |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .816 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1571.576 |
| | df | 190 |
| | Sig. | .000 |

Total Variance Explained

| Factor | Total | Initial Eigenvalues | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings ^a |
|--------|-------|---------------------|--------------|-------------------------------------|---------------|--------------|--|
| | | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total |
| 1 | 7.836 | 39.179 | 39.179 | 7.459 | 37.293 | 37.293 | 5.237 |
| 2 | 2.524 | 12.620 | 51.800 | 2.115 | 10.577 | 47.869 | 5.351 |
| 3 | 2.154 | 10.771 | 62.571 | 1.656 | 8.281 | 56.150 | 4.056 |
| 4 | 1.672 | 8.362 | 70.932 | 1.348 | 6.741 | 62.891 | 4.236 |
| 5 | 1.469 | 7.345 | 78.278 | 1.853 | 9.266 | 72.158 | 4.996 |
| 6 | 1.069 | 5.346 | 83.624 | 1.001 | 5.003 | 77.161 | 2.902 |
| 7 | .582 | 2.909 | 86.533 | | | | |
| 8 | .461 | 2.305 | 88.839 | | | | |
| 9 | .403 | 2.016 | 90.854 | | | | |
| 10 | .308 | 1.541 | 92.395 | | | | |
| 11 | .278 | 1.392 | 93.787 | | | | |
| 12 | .247 | 1.236 | 95.023 | | | | |
| 13 | .194 | .971 | 95.994 | | | | |
| 14 | .160 | .798 | 96.793 | | | | |
| 15 | .153 | .764 | 97.557 | | | | |
| 16 | .141 | .706 | 98.263 | | | | |
| 17 | .120 | .600 | 98.863 | | | | |
| 18 | .098 | .490 | 99.353 | | | | |
| 19 | .071 | .357 | 99.710 | | | | |
| 20 | .058 | .290 | 100.000 | | | | |

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Pattern Matrix^a

| | Factor | | | | | |
|------|--------|------|-------|------|------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| q1.1 | | | | .808 | | |
| q1.2 | | | | .969 | | |
| q1.3 | | | | .822 | | |
| q2.1 | | .906 | | | | |
| q2.2 | | .930 | | | | |
| q2.3 | | .936 | | | | |
| q3.1 | 1.000 | | | | | |
| q3.2 | .625 | | | | | |
| q3.3 | .993 | | | | | |
| q3.4 | .580 | | | | | |
| q4.3 | | | .490 | | | |
| q5.1 | | | .804 | | | |
| q5.2 | | | 1.038 | | | |
| q5.3 | | | .706 | | .343 | |
| q6.1 | | | | | | .774 |
| q6.2 | | | | | | .807 |
| q6.3 | | | | | | .884 |
| q7.1 | | | | | .980 | |
| q7.2 | | | | | .704 | |
| q7.3 | | | | | .796 | |

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.^a

a. Rotation converged in 6 iterations.

Pearson Correlation analysis

Descriptive Statistics

| | Mean | Std. Deviation | N |
|----|--------|----------------|----|
| y | 5.5197 | 1.51519 | 93 |
| z1 | 5.7742 | 1.31616 | 93 |
| z2 | 6.4973 | .94947 | 93 |
| z3 | 5.5645 | 1.23133 | 93 |
| z4 | 6.4731 | .88782 | 93 |
| z5 | 5.1434 | 1.25725 | 93 |

Correlations

| | | y | z1 | z2 | z3 | z4 | z5 |
|----|-----------------------------------|---------|---------|--------|---------|--------|---------|
| y | Pearson Correlation | 1 | .460** | .348** | .405** | .204* | .417** |
| | Sig. (2-tailed) | | .000 | .001 | .000 | .050 | .000 |
| | Sum of Squares and Cross-products | 211.214 | 84.358 | 46.047 | 69.548 | 25.244 | 73.070 |
| | Covariance | 2.296 | .917 | .501 | .756 | .274 | .794 |
| | N | 93 | 93 | 93 | 93 | 93 | 93 |
| z1 | Pearson Correlation | .460** | 1 | .500** | .422** | .202 | .464** |
| | Sig. (2-tailed) | .000 | | .000 | .000 | .052 | .000 |
| | Sum of Squares and Cross-products | 84.358 | 159.369 | 57.444 | 62.938 | 21.713 | 70.566 |
| | Covariance | .917 | 1.732 | .624 | .684 | .236 | .767 |
| | N | 93 | 93 | 93 | 93 | 93 | 93 |
| z2 | Pearson Correlation | .348** | .500** | 1 | .349** | .278** | .575** |
| | Sig. (2-tailed) | .001 | .000 | | .001 | .007 | .000 |
| | Sum of Squares and Cross-products | 46.047 | 57.444 | 82.937 | 37.579 | 21.535 | 63.119 |
| | Covariance | .501 | .624 | .901 | .408 | .234 | .686 |
| | N | 93 | 93 | 93 | 93 | 93 | 93 |
| z3 | Pearson Correlation | .405** | .422** | .349** | 1 | .257* | .290** |
| | Sig. (2-tailed) | .000 | .000 | .001 | | .013 | .005 |
| | Sum of Squares and Cross-products | 69.548 | 62.938 | 37.579 | 139.488 | 25.828 | 41.306 |
| | Covariance | .756 | .684 | .408 | 1.516 | .281 | .449 |
| | N | 93 | 93 | 93 | 93 | 93 | 93 |
| z4 | Pearson Correlation | .204* | .202 | .278** | .257* | 1 | .036 |
| | Sig. (2-tailed) | .050 | .052 | .007 | .013 | | .732 |
| | Sum of Squares and Cross-products | 25.244 | 21.713 | 21.535 | 25.828 | 72.516 | 3.692 |
| | Covariance | .274 | .236 | .234 | .281 | .788 | .040 |
| | N | 93 | 93 | 93 | 93 | 93 | 93 |
| z5 | Pearson Correlation | .417** | .464** | .575** | .290** | .036 | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | .005 | .732 | |
| | Sum of Squares and Cross-products | 73.070 | 70.566 | 63.119 | 41.306 | 3.692 | 145.422 |
| | Covariance | .794 | .767 | .686 | .449 | .040 | 1.581 |
| | N | 93 | 93 | 93 | 93 | 93 | 93 |

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Multiple regression analysis

Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .025 | 1.216 | | .021 | .983 |
| | z1 | .282 | .127 | .245 | 2.212 | .030 |
| | z2 | -.029 | .190 | -.018 | -.152 | .879 |
| | z3 | .260 | .124 | .211 | 2.090 | .040 |
| | z4 | .165 | .163 | .096 | 1.008 | .316 |
| | z5 | .300 | .138 | .249 | 2.183 | .032 |

a. Dependent Variable: y

Coefficients^a

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | .810 | .766 | | 1.057 | .293 |
| | z1 | .294 | .122 | .255 | 2.410 | .018 |
| | z3 | .283 | .121 | .230 | 2.349 | .021 |
| | z5 | .279 | .121 | .232 | 2.313 | .023 |

a. Dependent Variable: y